Hydraulic and Hydrologic Considerations in Planning

FLOOD RISK MANAGEMENT CLASS EXERCISE

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Objective

- **The students will complete an exercise designed to improve their abilities in selecting the types of alternatives to analyze during a flood damage reduction study.**

Exercise
Impacts of Various Flood Risk Management Measures

- Have the students predict the flood reduction impacts of various types of measures.
- Explore the consequences of such measures on upstream and downstream areas of the watershed.

Amite River and Tributaries Study Map

Franklin
Lincoln
Amite
Wilkerson
MISSISSIPPI
LOUISIANA
E. Feliciana
St. Helena
Comite River
Amite River
E. Baton R.
Livingston
Denham Springs
Baton Rouge
Lake Maurepas
Iberville
Ascension
Lake Pontchartrain
St. James
St. John
New Orleans
MISSISSIPPI RIVER

The Amite River Basin

- 2,200 square miles
- Includes portions of East Baton Rouge, Ascension, Livingston, East Feliciana, St. Helena, Iberville, St. James, St. John as well as 4 counties in Mississippi
- 20% of the basin lies in Mississippi
- 62% of the basin lies above Denham Springs
- Only 7% of the basin is urbanized

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1983 Flood
Amite River Basin

- The 1983 flood event was the flood of record for most of the Amite River Basin.

- It flooded over 357,000 acres and caused over $172 million in damages.

- Significant flooding also occurred in ’73, ’77, ’79, ‘89, ‘90, and ’93.

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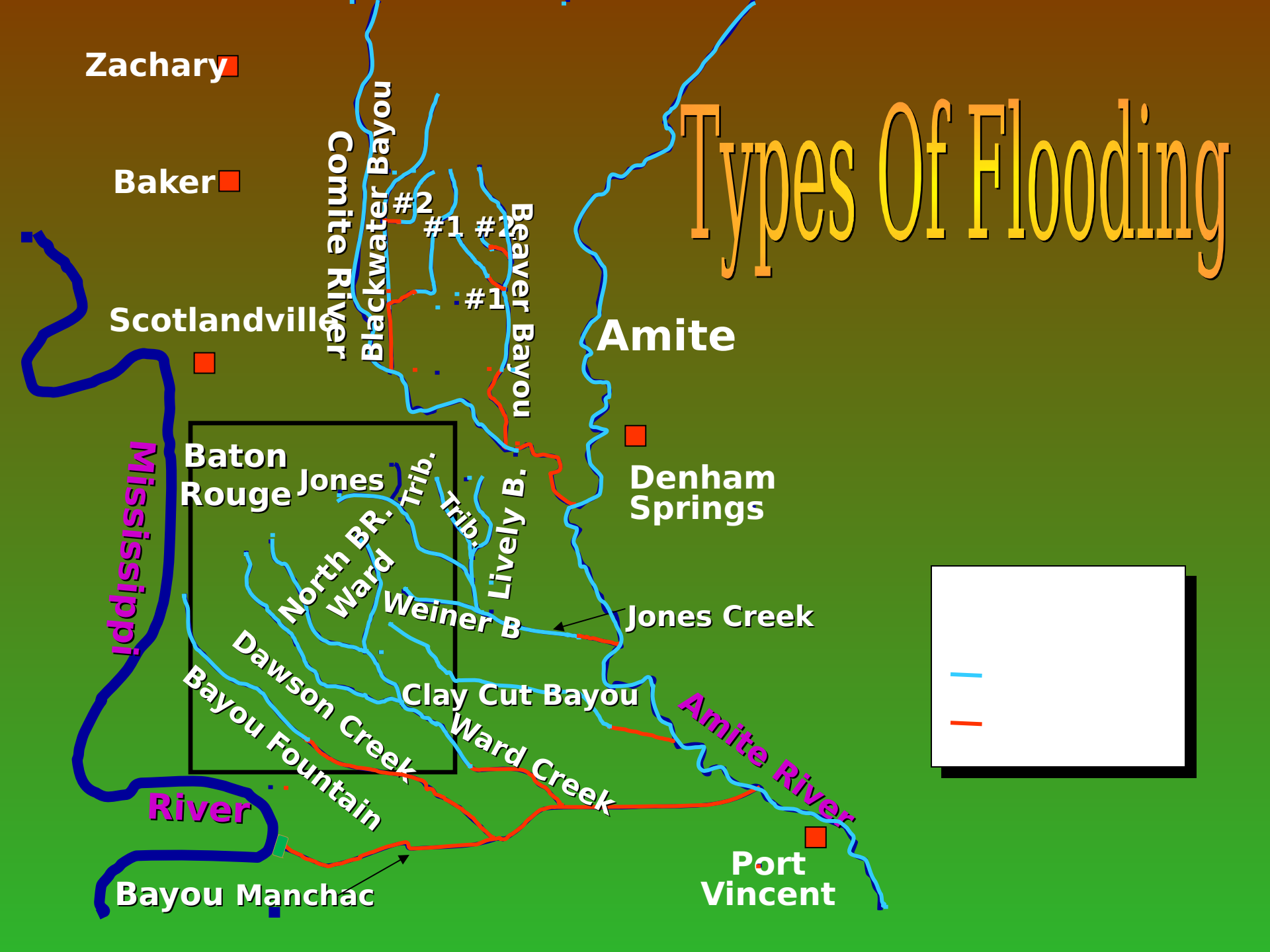
1983 Land Use Conditions in Amite River Basin

- Baton Rouge & Denham Springs area – urbanized – heavy flooding damages along tributaries
- Amite River
  - North of Denham Springs – heavily forested and agricultural areas flooded
  - South of Denham Springs – wide, wetland floodplains with small communities flooded
- Comite River upstream of Baton Rouge – heavily forested/agricultural use with small communities developing


Types Of Flooding
Zachary
Baker
Scotlandville
Amite
Denham Springs
Baton Rouge
Jones
Mississippi
River
Comite River
Blackwater Bayou
#2
#1
#1
#1
Beaver Bayou
Trib.
Trib.
Lively B.
North BR.
Ward
Weiner B
Jones Creek
Dawson Creek
Bayou Fountain
Clay Cut Bayou
Ward Creek
Amite River
Bayou Manchac
Port Vincent

Causes and Types of Flooding

- There is no one solution in a 2,200 sq mi basin

- Three types of flooding must be addressed:

  - **Basin-wide flooding** associated with Amite River (headwater and backwater)
  - **Headwater flooding** (not assoc with Amite River)
  - **Backwater flooding** (not assoc with Amite River)

- **Basin-wide flooding** occurs when a heavy rainfall occurs throughout the basin

- **Headwater flooding** occurs in the upper reaches of streams, usually caused by localized rainfall events

Exercise

-As a team, using material from lectures and notebook, and the watershed information provided:

- -Brainstorm potential flood damage reduction measures that could be analyzed for the Amite River Watershed.
- -Try to develop 2 or more alternative proposals for the Amite River, the Comite River, and the tributaries
- -How will each potential alternative impact flooding in the watershed?
- -What additional issues (environmental, engineering, economics, etc) need to be considered?

Exercise Summary

- **Each Team Present Their Conclusions from the Exercise**